

out this point very clearly. By using the departure from the normal seasonal temperature at such stations as Arequipa in Peru, he demonstrates that when the effect of the seasons is eliminated, the earth normally passes through temperature cycles having a length of two or three years. These in turn are superposed upon larger cycles having the eleven-year sunspot period, and these in their turn on still larger cycles. Occasionally these cycles are interrupted by volcanic eruptions. But during the period from 1909 to 1913, which includes the great eruption of Katmai in Alaska, the decrease in temperature due to this cause was less than the difference between the maxima and minima of the cycles in the sunspots. The similarity of Arctowski's curves in different parts of the

world seems to demonstrate that the cycles must be due to some outside cause which can scarcely be anything except the sun. Thus both from Köppen's figures and those of Humphreys, Abbot, and Fowle, and from Arctowski's independent and more detailed studies, it appears that at the present time far the greatest control of the earth's temperature is variations in the sun. If a similar relation prevailed in the past, solar variations must have taken their part with terrestrial phenomena among the main causes of geological changes of climate.—*Ellsworth Huntington.*

* Geological evidence, however, points to periods of much greater volcanic action than in recent times; while we have no evidence of the occurrence of appreciably greater solar variability. Therefore the terrestrial factors may have been relatively much more important in controlling climatic changes in the geologic past than now.—Editor.

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